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we now know it disposes it to a more speedy Coagulation only by reducing the force of the blood Vessels.

It would seem from all these facts, that at the lips the blood is acted upon by the blood vessels, the more it loses of its animalized state, and the lower it descends down to a level with dead or non animalized matter, much sooner as Gellies which coagulate so tardy as they are deprived of this heat, or exposed to the cool Air: But the more the blood vessels act upon it, within a certain Degree called Synocha Action, the slower the blood coagulates, and that in Consequence of the Animal

qualities it acquires by the stimulus
of the blood vessels resisting the influence
of the cool air upon it. The blood in
this respect is ~~with the whole body~~ in a
upon a footing with the whole body which
resists the effects of cold air, in proportion
as it is excited by motion, or cordial
aliments or drinks. It is agreeable to
observe the same social or reciprocal
intercourse between the blood vessels, &
the blood that takes place between the heart
and brain. They both mutually stimulate
each other into life & health, &
they both die from the excess or abstra-
-tion of each other's stimulus. The fibrin
or lymph of the blood is ~~certainly~~
dissolved as certainly from the feebleness

7 or Absence of Action; as from an ex-
=cess of it. This has been frequently ob-
=served in the Survey & in the Low State of
and in the Low State of
of typhus fevers and in the Tetanus.

In the last disease, the Arteries become
weak from the translation of their ex-
=citement to the muscles & tendons.

The fibrin, or coagulating lymph
of the blood is supposed to be the exclusive
seat of its Vitality, or what I have called
its Capacity of life. The facts & arguments
upon which this Opinion is founded are
as follow.

1 Fibrin when found in the Arteries after
death, or when thoroughly deprived of
its serum by Absorption or Otherwise,
discovers evident marks of a fibrous
structure.

2 Fibrin discovers motion when subjec-
=ted to galvanic influence similar to that
which is observed in a muscle.
3 M. Poiseuil discovered contraction, and
dilatation in the fibrin analogous to the
same actions in a muscle; in a false
Aneurism in a person at Lyons, and
on a part where there was no artery
large enó to produce a sensible pulsation.
M. Dumas who relates this fact in his
physiology asks immediately afterwards,
whether the pulsations of the arteries
may not be assisted by the alternate
contractions and dilatations of the lymph
of the blood? ——

4 The Coagulation of the blood is ac-
=celerated, and retarded by all the

Causes which increase, retard, or
destroy the Contraction of the muscles.
It coagulates slowly in proportion to
the muscular texture it acquires by
being acted upon by a certain grade
of Stimulus in the blood vessels

There are three different forms
assumed by the coagulating lymph accor-
=ding to the different grades of Arterial
Action upon it. 1 The appearance of a
relaxed muscle, or Dead flesh. This is pro=
=duced by ~~short~~ a moderate degree of that Action which takes
place in pleurisy & Rheumatism. 2 The
appearance of a Contracted muscle, or
a cupped appearance. This is produced by
a higher degree of Synochia or pleuritic or rheumatic Action.

3 membrane which is pervaded by nerves
and blood vessels. This is produced by a
~~little higher process~~ Synocha Action, ~~and~~
~~Heats prevades~~ protracted for a considerable
time. This membrane occurs only in
the Synocha, or what is called the
open inflamatory State of fever. I
have carefully examined Lieutenants
Dissections of persons who have died with
malignant fevers in which we know the
~~with a reference to~~ this Subject
~~this subject~~, blood to be so much
on so little Stimulated as to lose its co=
=agulating power, and found but one
instance of a membrane or completely
organized flesh being found in any part
of the body, and that was probably

I produced by the fever being Synocha, that is openly inflammatory in its first or last Stage.

I said a little while ago that blood exhibited a buffy coat when drawn in pregnancy. This is the effect of inflammatory action imparted to the blood vessels by the stimulus of the Disease Uterus. This inflam^{d} action is wisely intended I believe to increase the quantity of fibrin in the blood for the purpose of nourishing the fetus in Utero, fibrin is the basis of Animal matter and of course constitutes animal nourishment. From this, it would seem that the human body is not only conceived and brought forth in

disease, but that the matter from
which it derives its growth in the womb is
the product of a disease, that is of an
inflam^d action in the blood vessels.

5 I infer that the febrile is the seat of
what is called vitality in the blood from the
following pathology former than the
Coagumentum of blood in which there
appeared no buff, or fibrin, and much
former than the Serum of the blood.
This has been ascertained by an experi-
=ment made by Sir John Pringle, and
related in his Appendix to his treatise upon
the diseases of the British Army. This
experiment was repeated at my request
by Mr Thornton in the Pennsy^a hospital

to, and ~~with~~ altith circumstances which add additional support to the doctrine I am now delivering. The toss a portion of the buff of the blood of a person in an inflam^d fever, and an equal portion of the fibrin buff of the blood of a person in good health, and exposed them both to the same degree of heat in similar situations. The former putrefied sooner than the latter. This experiment was repeated, and with a similar result. The more speedy putrefaction of the buff blood in an inflam^d fever was occasioned by its being more animalized by the stimulus of disease. Thus you see life is excited in the fluid a part

of the fluids of the body, as well as in
all the solids, by means of stimulus.
As the stimulus of disease increases the
quantity and force of life in the solids,
so it does in the fibrin of the blood.
Again — we observe the stimulus of dis-
=ease to produce not only sensibility in
parts devoid of it in health, but irrita-
=bility or contractility — as in the bones and tendons. We observe the
same effect upon the fibrin
of the blood. It imparts contractility
to it when it is coagulated, and sensibility to
it when it is converted into membrane.
From these facts I have been led to con-
=sider the fibrin of the blood like the
bones and tendons as animalized

11 only in their natural or healthy states,
and that they become ~~irritated~~ irritated, that
that is acquire sensibility & contractility
only by the additional stimulus of
Disease. —

6ly and lastly. The sudden Death induced
by the poison of the Viper seems to
depend upon the sudden extinction
of the animalization qualities of
the fibrin of the blood. It does no
known unless it come in contact with
the blood. From the suddenness with
with which death is produced, it would
seem that the whole fibrin of the
blood is at once rendered inert, or in
other words, one great animalized

muscle. Every part of it dies from an
impression made upon a ~~tissue~~ small
part of it by what I have called the
Sympathy of Continuity.

From the history that has been
given of the ~~blood~~ effects which Stimu-
=li induce upon the fibrin of the blood,
a new nomenclature seems necessary
to designate the Changes which are
produced upon it. Its Dissolution ~~death~~
produced upon it. Its Dissolution ~~death~~ whether by
~~be called it apparent Death~~ whether by
an excess or Abstraction of Stimulus
should be called Apparent Death. When
it is restored to its natural consistency,
by means of bleeding or Stimulants it
should be said to be recuperated.

I have said membrane is produced

12 from the fibrin of the blood. It oc-
=curs more frequently after pneumony
and Cynanche trachialis than after
any other form of inflammatory
fever. The lungs are made to adhere to the pleura,
by it, and the wind pipe is obstructed
by it. Besides membrane, polypi,
Schirri and the basis of Calculi and
pus are formed from it.

The last remark I shall make
upon it, is only to upset that it is
=ment of the body. It is admirably fitted
for this purpose, being of a very nutritive nature.
One reason why
Aliment to the Jews, because it conveyed nourish-
into the body that did not from its quantity
the Climate inhabited by them.

dissolved in it. These are
V ~~Albumen~~ Albumen - gelatin Sal
Soda - Sulphur, & some neutral salts. The
Albumen is obtained by coagulating it
by means of heat. It contains like-
= wise some Lymph dissolved in it in
which case

~~any other part of an animal~~ 29.

by

II: We proceed next to say a few words upon the Serum of the blood. It is

water with several matters, ~~[illegible]~~

~~[illegible]~~ it has been called Serosity by Mr. Senac. Serum of the blood constitutes the gravy of animal food, which is then obtained by itself affords a light, and pleasant article of food for invalids. It tinges the Syrup of violets of a green color. By a chemical analysis it yields albumen, gelatin, Sulphur - Carbonate of Soda - muriate of Soda - phosphorate of Soda, and phosphorate of lime. These uses are to furnish those fluids which are

necessary in the different Cells & cavities of the body such as the Ventricles of the brain, and pericardium, and to dispose and convey out of the body all saline and improper matters. It is the excess and stagnation of this part of the blood that constitutes local, and general Dropsies. ——

tit The red Globules of the blood come next Under our notice. In many disputes have existed About their form. The latest Observations prove, they are not quite globular. I saw them Distinctly in the year 1769 thro' Mr. Hewsons Microscope floating in the

in the Serum of some blood, in which they exhibited an appearance resembling in their figure a Holland Cream Cheese. They are larger in a Skate, and less in an Ox than in man. The diameter of a single Globule is computed by Mr. Bell to be less than $\frac{1}{3000}$ part of an inch. [They are of a more florid color in the veins than in the arteries]. When dry they are highly inflammable, from which it has been supposed they are of an oily nature. That this is not the case I infer from the lymph where dry, being equally inflammable, and yet we know it does not contain a particle of Oil in it. The ~~RD~~ Color of the Globules is derived from the action of the Oxygen

14 of the Air upon them. we infer this
to be the case from its encreasing the
red Color of the blood out of the body, &
from the blood losing its red color when
Deprived of the Air. This is evident from
the Dark color of the blood which falls
to the bottom of a bowl. The Oxygen of
the Air Dr Priestley has taught us ~~im~~
encreases the red Color of the blood even
when it is confined in a bladder. That
the oxygen of the Air is the Cause of the
red Color of the blood is obvious from its
imparting the same color to lead, and to
the Sulphate of Iron when subjected to
Calcination. The red color which we
observe in Arms that have been
preserved by Salt petre is Derived from

the Oxygen contained in that salt.

The Dark Color which is Observed in blood that has Stagnated in any part of the body, and which is sometimes perceived in the face in certain dis=eases of the lungs is occasioned by the incomplete oxygenation of the blood.

I have said the red globules are not the most essential part of the blood. As a proof of this, we see perfect life in insects without them. We see moreover life & recovery from diseases in which there are scarcely any of them in the blood vessels to give the blood a red Color. Dr Stubbe states that the poor people in Barbadoes many years ago drank a liquor called mobby made of potatoes fermented with water which

15 deprived their blood of its red Color, & hence it became common to call very pale people in that island "Drabby faces".

Good health is Connected with a due quantity of red globules in the blood vessels. Their healthy presence is known by a red Color in the lips & cheeks. Their excess is known by a highly florid color of the face.

Their use is said to be to keep the Lymph in a fluid state by being diffused through it, & to give tone to the blood vessels — & to furnish a substance capable of decomposing the oxygen of the air in order to obtain from it, that portion of heat which is generated in the lungs.

They sometimes like the lymph,

V But it sometimes exists in it in an elastic state
to ~~of the process of this is the blood in~~
a striking proof, of which occurred in our hospital
~~in~~ in the month of April 1811 - Upon
opening ~~the~~ a Vein in the Arm of a
man whose skull was fractured. the
blood ~~in~~ issued ~~with~~ a full stream for a
while, and then suddenly stopped. This
stoppage was followed with a hissing
noise like the discharge of air from a
porter bottle. It was distinctly heard
not only by ~~Mr~~ Surgeon ~~the~~ apothy of
the hospital who opened the vein, but
by ~~the~~ the Servants of the hospital
who held the bowl that received the blood.
After continuing for about 1/6 of a
minute, it suddenly stopped, upon
which blood again issued in a full
stream from the ~~Arm~~ Vein. —

Cases tells us that air has sometimes
been found in the cups employed in ~~dry~~ cupping

and Serum, become the cause of diseases,
by ~~+~~ forcing their way into Serous Vessels,
and thereby inducing inflammation — by
bursting small Vessels, and thereby pro=
=ducing hemorrhages, and by stagnating
in lax parts, and thereby bringing on
Congestions and Obstructions.

Many Substances have been supposed
to enter into the Composition of the blood
besides those which have been mentioned.
It is certain it contains some air
in a semielastic state. V This air sometimes
Often
stagnates in parts of the body and is se=
=creted and poured forth from the liver
in certain Diseases. ^ Bret of this I shall
say more in our pathology.

There is a happy peculiarity in

the blood which defends it from being injured by the mixture of bile, or an undue proportion of salts with it. This is not however the case with matters of a putrid nature. They are speedily thrown from it by the channels of the liver, the kidneys & the bowels. I before mentioned its aptitude to be destroyed by ~~bile~~ coming in contact with the smallest portion of the poison of the viper.

The quantity of blood in a man of ordinary size is five & twenty pounds. We have noticed the use of each of the component parts of the blood. It remains that I mention the uses of the whole mass. They are to impart a

portion of that life to the body which it derives from stimuli – to impart ~~[illegible]~~ sensibility to the nerves by giving tone to this contiguous blood vessels, ~~by~~ to afford a fluid from which all the Secretions of the body are Derived. How various & wonderful are its properties & uses! It was after a Survey of both probably that moses declared the life of every animal to be in its blood.

and perhaps to absorb and convey Oxygen to the muscles & nerves as the means of sensibility & irritability

By a Chemical analysis, the blood has been found to yield the following Matters – Water – fibrin, – Albumen, Gelatin, – Hydrosulphurate of Ammonia, Soda, Subphosphorate of Iron, – Muriate of Soda, phosphate of Soda, and phosphate of lime.

Gelatin exists in Animals of the

17 lowest order. In is in a their and
hinged states in the Zoophytes – it is of
~~a~~ a thicker consistence in insects;
It is combined with albumen in Crus-
=cous Animals and Worms. It is
combined with albumen & fibrin in
certain reptiles and in fishes, but it
exists in the greatest perfection and com-
=bined with the greatest quantity of
in birds = Quadrupeds. & the albumen
albumen and fibrin. The gelatin is
formed first, in the production of animal
species.
matter out of which are formed albu-
=men & fibrin in the order in which
they have been mentioned. —